MARINE REVIEW.

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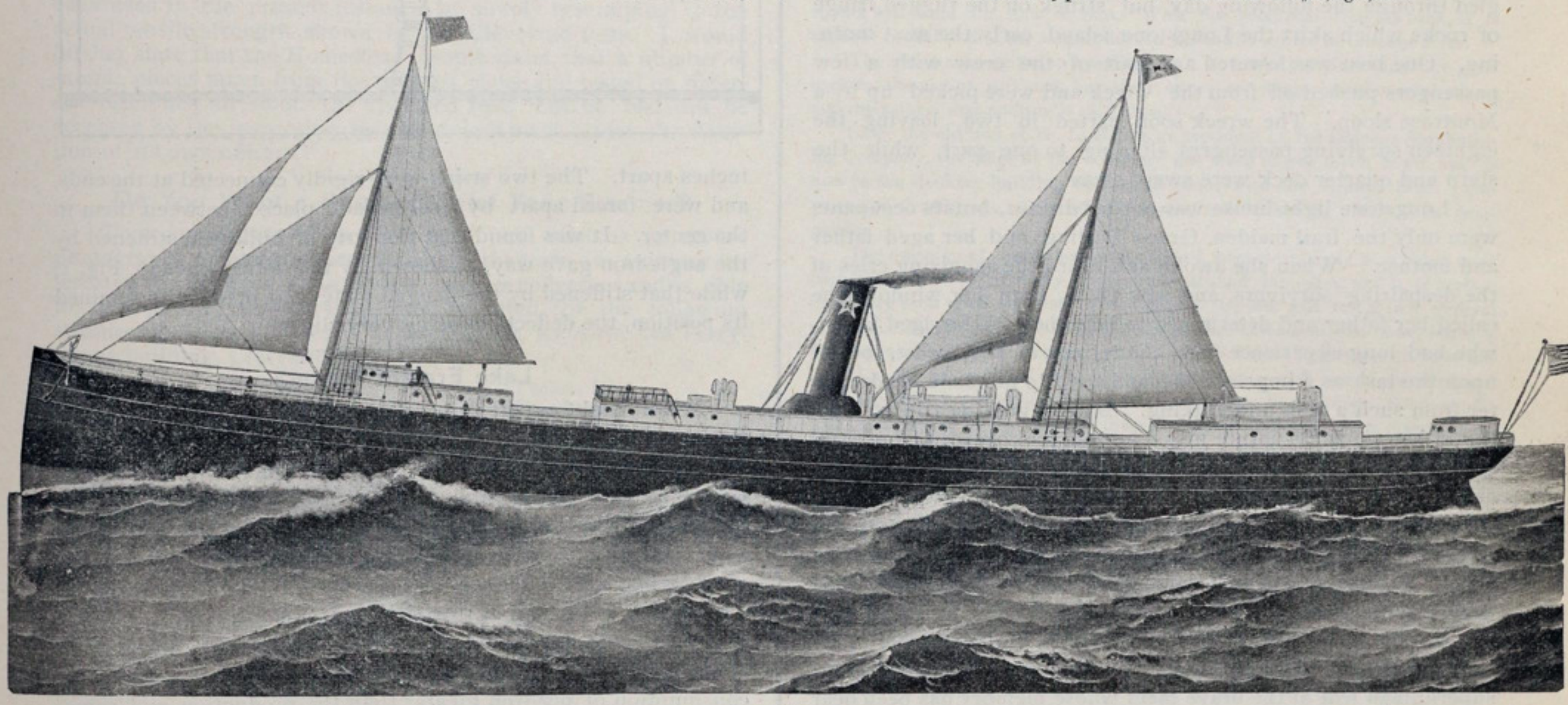
Largest All Steel Merchant Steamer.

Another of the Morgan line of steamships running between New York and New Orleans, the El Rio, is shown in the accompanying engraving. The vessel, launched a short time ago at the yards of the Newport News Ship Building Company, Newport News, Va., is the largest all-steel merchant steamer now under the American flag. The principal dimensions of the new ship are: Length over all, 406 feet; length between stem and after side of propeller post, 380 feet; beam, 48 feet; molded depth, 33 feet 9 inches; draught when loaded, 23 feet; gross tonnage, 4,600 tons. The engines of the new ship are of the triple-expansion, vertical, inverted direct-acting type. The three cylinders measure, respectively, for high, intermediate and low pressure, 32, 52 and 84 inches, with a common stroke of 54 inches. There are three double-ended Scotch boilers, measuring 20 feet 6 inches in length by 13 feet 10 inches in diameter. The boilers will work ordinarily under a steam pressure of 165 pounds to the square inch. Each boiler is provided with six furnaces. The engine pistons have no tail rods, but instead are fitted with adjustable followers. The valves are of the piston-slide variety, placed on the front of the engine close to the cylinders, and actuated by improved Marshall's valve-gear. The surface condenser has 6,400 square feet of cooling surface, water being furnished by an independent centrifugal circulating pump. The crank shaft is 16 inches in diameter. The propeller is four-bladed, of the built-up type, and measures 18 feet in diameter. The bunker capacity of the El Rio is 1,000 tons. As the coal consumption does not exceed 60 tons per day, it is calculated that the new ship can coal in New York for the round trip, and on return have at least 200 tons of coal on hand. The hull and interior arrangements are patterned much after the order seen in the big El Sol and El Norte of the same line. This boat is expected to be faster than the El Sol and El Norte. A duplicate of the El Rio, known for the present as No. 6, has just been laid down at Newport News. These vessels are built under the superintendence of Horace See, naval architect of New York, and their construction is in accordance with the rules of the American Ship Masters' Association. We are indebted to the American Shipbuilder for the engraving.



MORGAN LINE STEAMER EL RIO, NEW YORK AND NEW ORLEANS.

A Great Side-Wheel Steamer.

Another side-wheel boat now being built for the Fall River Line of Long Island sound steamers at the Delaware River Ship Building Works, Chester, Pa., will be the largest vessel of her kind in this country. She is 440 feet over all, or 20 feet longer than the Puritan. Her general design and arrangements are similar to those of the Puritan. The hull, which will be of steel, and double on the bracket system, will be divided into fifty-eight water-tight compartments. The engines will be double-inclined compound, of 8,000 horse power, and the boilers, ten in number, will be of the Scotch type. Her cost will be $1,250,000.

Great Progress in Shipbuilding.

John Harvard Biles, professor of naval architecture in the University of Glasgow, Scotland, who has just sailed for home, after a visit to Messrs. Cramp & Sons of Philadelphia, is the designer and architect of the Inman Line flyers, City of New York and City of Paris. He has been in this country to consult with the Inman company and the Cramps respecting the five new steamships which are to be built to carry the United States mail. Said Mr. Biles in an interview: "While here I have made a special study of American shipbuilding, both in vessels of war and the merchant marine, and I must confess my surprise at the astounding strides which are being made in shipbuilding in this country. The skilled labor which is to be found on every side, the magnificent machinery almost fresh from the hands of the inventor, and the marvelous rapidity of work are fast putting the marine service of this country in the foremost rank of the nations."—Marine Journal.

Grace Darling's Jubilee.

The fiftieth anniversary of Grace Darling's death, which has just been celebrated with becoming local loyalty in Northumberland, England, her birth place and last resting place, creates a renewed interest in the simple story of her heroism. In other parts of England as well, a movement is in progress to establish a memorial to honor her memory, which shall be of a national character. On the eve of such a movement it may be well to recall the story briefly.

It was on the night of Sept. 5, 1838, that the Forfarshire, a passenger steamer of the old-fashioned paddle type, and carrying about 300 tons, started on her voyage from Hull to Leith. With unsurmountable difficultles to encounter, a furious north-easterly gale, a dangerous coast to leeward, and leaking boilers, she struggled through the following day, but struck on the rugged fringe of rocks which skirt the Longstone island, early the next morning. One boat was lowered and part of the crew with a few passengers pushed off from the wreck and were picked up by a Montrose sloop. The wreck soon parted in two, leaving the eighteen surviving passengers clinging to one part, while the stern and quarter deck were swept away.

Longstone light-house was not far distant, but its occupants were only the frail maiden, Grace Darling, and her aged father and mother. When she awoke and heard the agonizing cries of the despairing survivors, and saw them from her window, she called her father and determined to save them. Her aged father, who had long experience with the terrors of that coast, looked upon the task as a hopeless one, and tried to dissuade his daughter from such a rash undertaking. But the great-hearted sympathy of her woman's nature urged her on, and overcame her father's objections. They launched their little coble, and with Grace at one oar and her father at the other, they struggled through the waves to the wreck. But now the greatest skill and presence of mind was needed in getting the overjoyed survivors into the boat. A false move and their frail coble would have been dashed to pieces on the sharp reef. But one by one they were got into the boat and safely landed in the light-house, where they were cared for until other relief came. Such was the almost superhuman feat of the brave maid whose memory has been dear to the heart of every Englishman for a little more than fifty-four years. Her death four years after her wonderful exhibition of courage, on Oct. 20, 1842, left many sad hearts among English seafaring and sea-loving people.

Construction of Bulkheads.

In arrangements now being made in lake shipyards for adding to the strength of steel vessels, some improvements will probably be made in the construction of water tight-bulkheads, especially collision bulkheads. Throughout Great Britain the question of efficiency of bulkheads under strains brought to bear upon them through compartments being flooded, in event of damage to the hull by collision, sunken rocks or other causes, has called forth a great deal of careful thought. Some builders in Great Britain have of late been introducing in bulkheads flanged plates in place of the usual method of stiffening them by angle irons. The plates are flanged by special machines, one type of which is manufactured by Hugh Smith & Sons of Glasgow. In view of the claims made for the flanged plates, Lloyds gave instructions to A. & J. Inglis, shipbuilders of Pointhouse, Glasgow, to prepare two test strips of bulkhead, as per Fig. 2, which were each 12 feet long and 30 inches wide, the one being of the usual design, consisting of a plate eight-twentieths of an inch thick, stiffened by an angle iron 6 inches by 3½ inches by

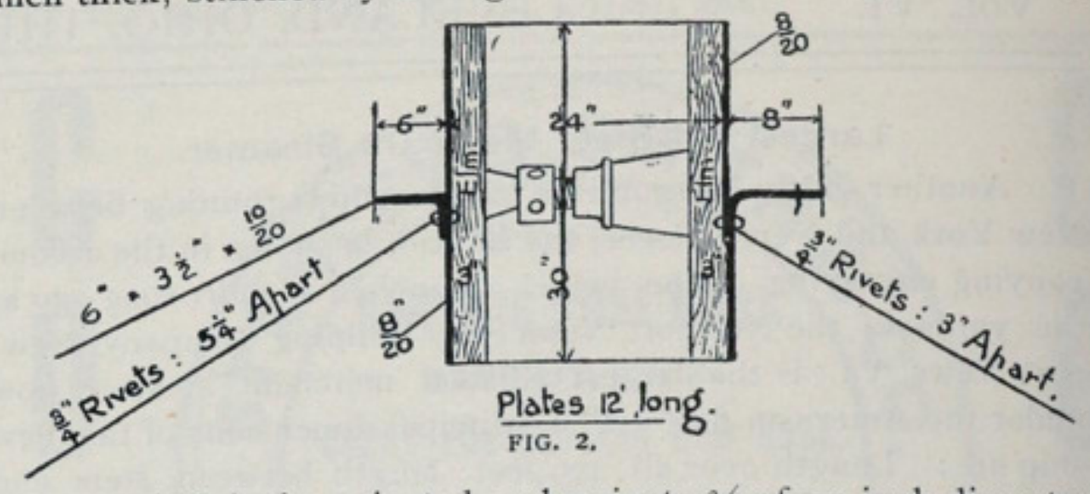


FIG. 2.

ten-twentieth inches, riveted on by rivets ¾ of an inch diameter and 5¼ inches apart; the other was of the flanged plate design, and consisted of two plates nine-twentieths of an inch thick, the edge of the one being flanged out 8 inches, and the two plates riveted together with rivets ¾ of an inch in diameter and 3

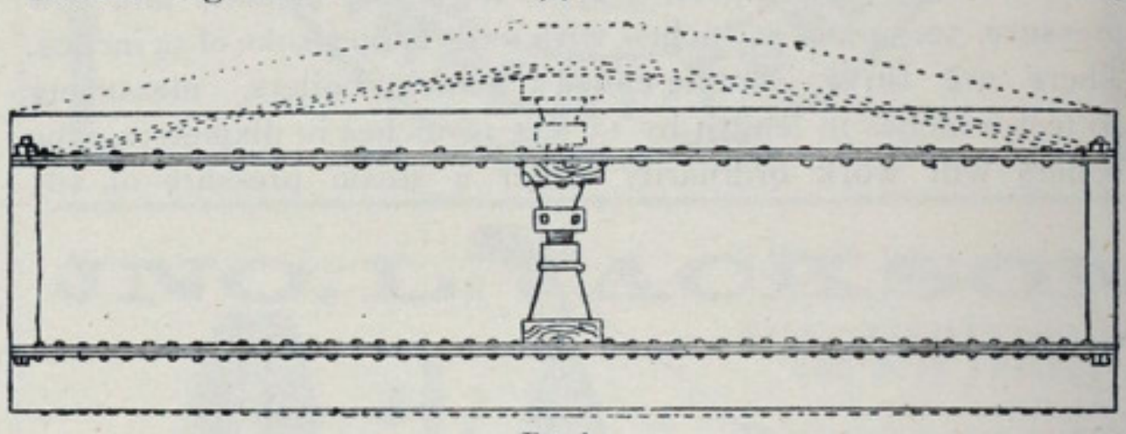


FIG. 1.

inches apart. The two strips were rigidly connected at the ends, and were forced apart by a screw-jack placed between them in the center. It was found that the strip of bulkhead stiffened by the angle-iron gave way, as shown by the dotted lines in Fig. 1, while that stiffened by the flanged plate had practically retained its position, the deflection being very slight.

Lake Freight Matters.

A very light export demand for grain is the cause of a tame closing of navigation. A few vessels have already tied up and the entire fleet will be in winter quarters somewhat earlier than was expected. Shipments of grain from Chicago during the past five or six days have been only moderate, while the movement from Duluth was practically ended for the season with the close of last week. Duluth shippers have taken no tonnage at 4 cents this week, and at this writing it is hardly probable that 3½ cents could be secured. Vessels have taken ore, however, at about the rates that have ruled for two weeks past. With the consumption of pig iron greater than the production and something of a reduction in stocks, an improved feeling is noticeable in all departments of the iron market and this has undoubtedly had much to do with the very large shipments of iron ore. The great record of shipments in 1890, a little more than nine millions, will not be reached this year, but the total will be greater than was expected when the season opened. To the shipments of 7,837,758 gross tons on Nov. 1, may be added probably 600,000 tons for November shipments, which will make the total movement by lake a little short of eight and one-half millions. Rail shipments have not been heavy this season. The best rates so far paid on ore are $1.40 from the head of Lake Superior, $1.20 from Marquette and 90 cents from Escanaba.

Commander Ludlow, U. S. N., inspector of the ninth light-house district, announces that on the 12th inst. the red buoy on Lancing shoal, three miles north of Squaw island, Lake Michigan, was accidently picked up by the tow line of a barge, and was dropped about four miles northwest of Grays reef light vessel. The buoy will be replaced as soon as possible.

Inspection Service Upheld.

Some time ago the inspectors of steam vessels at Cleveland rejected a sample of boiler plates furnished to Cleveland builders from the Carnegie works at Homestead, Pa. The managers of the Homestead works were of the opinion that the Cleveland inspectors were discriminating against them, and the matter was brought to the attention of James A. Dumont, supervising inspector-general. Gen. Dumont immediately gave personal attention to tests of the samples in question, and the result of the investigation upheld the inspection service as well as the Cleveland officers. In answer to an inquiry from the REVIEW, Gen. Dumont says:

"Out of a large number of boiler plates furnished the Globe Iron Works Company of Cleveland in February last from the Homestead, Pa., mills, two plates were found by the local inspectors at Cleveland slightly deficient in tensile strength. The Homestead company not being satisfied therewith, I had the four broken ends of samples prepared for a new test. Two pieces thereof were sent to Philadelphia for test, which confirmed that of the Cleveland inspectors. The other two were tested in my presence at the Homestead mills. One was found approximately the same as the test made at Cleveland and Philadelphia, and the other one slightly exceeded the required strength; but as five tests out of six failed, there could be no question of the correctness of the original tests made by the Cleveland inspectors. It is but justice to the Homestead works to say that the quality of the material tested, in other respects than tensile strength, was equal to any material ever put in a marine boiler, and could have been used in the present instance by simply restamping to the actual tensile strength shown by the Cleveland tests. I would further state that the Homestead people claim that a number of sample pieces taken from the rejected plates and tested on different machines all stood the required test; but no test can be accepted by the inspection service unless made under the direction of its own officers."

Do You Want a Photograph of Your Steamer?

To accommodate subscribers who are anxious to secure photographs of lake steamers in which they are in any way interested the MARINE REVIEW has made a collection and is able to furnish 7x9 photographs, well mounted, of the following steamers at $1 each. Write to the MARINE REVIEW, 516 Perry-Payne building, Cleveland, O.:

Arabia,
America,
Averell, W. J.,
Avery, Waldo A.,
Alaska,
Albany,
Atlanta,
Argonaut,
Boyce. Mary H.,
Boscobel,
Baldwin, S. C.,
Buffalo,
Boston,
Bieleman, C. F.,
City of Duluth,
City of Rome,
Caledonia,
City of Ludington,
City of Racine,
Cayuga,
City of Fremont,
City of Naples,
Chemung,
Clarion,
Conemaugh,
Conestoga,
Chicago (Goodrich Line),
Chicago (West'n Tr. Co.),
City of Traverse,
City of Paris,
Codorus,
Donaldson, Jas. P.,
Eddy, John F.,
Egan, W. M.,
Eddy, C. A.,
Fayette,
Foster, Parks,
Florida,
Flower, R. P.,
Gilcher, W. H.,
Gogebic,
Grecian,
Gladstone,
Grover, M. B.,
Gilchrist, J. C.,
Harlem,
Helena,
Haskell, W. J.,
Hall, John E.,
Hudson,
Hurd, Jos. L.,
Italia,
Indiana,
Ionia,
Juniata,
James, H. R.,
Jewett, H. J.,
Langdon, Jas. R..
Lackawanna,
Louisianna,
Lehigh,
Lycoming,
Lawrence,
Manola,
Maruba,
McVittie, A.,
Masaba,
Maryland,
Marina,
Mather, Sam'l (whaleb'k)
Maytham, Thos.,
Manchester,
Merrimac,
Minnesota,
Manhattan,
Massachusetts,
Marshall, Sam'l,
Mills, Rob't,
Milwaukee,
Mahoning,
Neosho,
New York,
Northern King,
North Wind,
Owen, J. Emory,
Owego,
Owen, Ira H.,
Onoko,
Portage.
Palmer, Thos. W.,
Packer, R. A.,
Petoskey,
Peerless,
Parnell, C. S.,
Philadelphia,
Prince, F. H.,
Perrett, J. C.,
Pathfinder (whaleback),
Panther,
Pillsbury (engines),
Pontiac,
Rochester,
Rosedale,
Rugee, John,
Russia,
Smith, Gov.,
Saranac,
Syracuse,
Susquehanna,
Seneca,
Sachem,
Smith, Ed.,
Schuyikill,
St.Lawrence, (do engines)
Scranton,
Sheboygan,
Shaw, John (schooner),
Tilley, Sir S. L.,
Tacoma,
Tuscarora,
Thomson, A.D., (whaleb'k)
Tioga,
Uganda (engines),
Viking,
Virginia,
Vance, F. L.,
Wheeler, F. W.,
Wyoming,
Williams, George F.,
Wisconsin,
Wissahickon,
Wilbur, E. P.,
Westcott, J. W.,
Washburn,

CHICAGO LAKE INTERESTS.

WESTERN OFFICE, MARINE REVIEW,
No. 13 Western Union Building, CHICAGO, Ill., Nov. 17.

Attorney Kremer is confident that the United States supreme court will uphold bills for home supplies, as agninst mortgages at marshal's sale. Mr. Kremer has been fighting for the cause of home supplies these many years. There has been scarcely a marshal's sale in this city in which Mr. Kremer has not represented the claims of home supply men, but Judge Blodgett has steadfastly held that the proceeds of the sale were first to satisfy mortgages, and if anything was then left the home supply men could take their chances. As a general thing there was nothing left after the mortgage holders were satisfied, and the people who had made it possible for the boat to earn money were left out in the cold. In the case of Finney vs. Reich, otherwise known as the propeller Rumbull case, the old question of home supplies cropped out, and Mr. Kremer has fought it through to the court of last resort. A decision can now be expected at any time. For a half century United States district courts have ruled one way and the other, but at last the question at issue is to be settled for all time. If Mr. Kremer is successful, there will be general rejoicing among all classes of people who are engaged in supplying boats and in repairing them.

Indications now point to good rates being paid for winter storage in boats. It is evident that the Chicago elevators will be full to overflowing before many weeks have passed after the close of navigation, and vessels in the river will be in good demand for storage purposes. The way the markets now are, there will be good money in buying grain, placing it on board the boats and selling options against it. While vesselmen may not take this means of turning an honest penny, there are plenty of speculators on the Chicago board of trade who will not overlook the chance. Already there is talk of a rate of 6 cents a bushel for winter storage and freight to Buffalo at the opening of navigation next spring. It is likely that under the present favorable conditions vessel agents will hold for such a rate. With the good coal freights back, it is thought probable that the largest fleet in years will winter in Chicago river.

The anti-smoke agitation has died out. A few of the river tugs have gone back to the use of soft coal, but their crews are so extremely careful about making smoke that nothing is said about it.

Since the election of W. L. Brown as president of the Chicago Shipbuilding Company, the office of the company has been moved down town, and is now in the Rookery building on the same floor with the Illinois Steel Company and the Chicago offices of Cleveland and Mahoning valley iron companies.

The question of insurance inspection of steel steamers is now being most earnestly discussed by every underwriter around the lakes, and it is certain that very soon after the close of navigation the talk will result in a general meeting. No one now knows what shape the movement will take, but it is not improbable that the present Inland Lloyd's Vessel Register will be so enlarged as to take in vessel owners and shipbuilders as well as underwriters, and complete rules for the construction of steel vessels be adopted. Some expert will be employed to represent all these combined interests. This plan is meeting with much more favor than the project of having some of the ocean registers modified to conform to the needs of lake commerce.

Work of the Ship Yards.

The new tug being constructed by the Union Dry Dock Company of Buffalo for the Hand & Johnson Tug Line, also of that port, will be 82 feet long, 19 feet beam and 10½ feet deep, with a 22x24 inch engine, and boiler 8x14 feet.

Rogers & Bird of Saugatuck, Mich., will begin work immediately on a small wooden steamer, to carry freight and passengers between Chicago and Holland, Mich. The boat will be 145 feet keel and will cost about $30,000. She will be named the City of Holland, after the town in which her owners reside.

It is said that the freight steamer to be constructed by the Union Dry Dock Company, Buffalo, for the Lake Erie Transportation Company, Toledo, will be 26 feet deep. Extra depth is given to the vessel in view of the completion, about three years hence, of the 20-foot channel throughout the lakes. As the boat is to be only 285 feet over all, this increase in depth will also add to her strength.

F. W. Wheeler & Co. of West Bay City, Mich., now have contracts for six big freight boats—three steel steamers, one wooden steamer and two wooden schooners. The latest contract, included in the foregoing, is for a wooden schooner to tow with the steamer R. P. Ranney of Cleveland. The new boat will be 249 feet keel, 40 feet beam and 20 feet depth of hold. She will be built with a view to being supplied with machinery later if the owners desire it.

Capt. Frederick Woodruff, of the schooner Monticello, was lost overboard from his vessel Monday, while getting behind Grand island, Lake Superior, for shelter.

To Eclipse All Previous Seasons.

In a letter to Hon. George H. Ely of Cleveland, Gen. O. M. Poe directs attention to the fact that the St. Mary's Falls canal traffic this season is already more than a million tons ahead of the traffic entire in any previous season. "The freight tonnage of the canal this season up to and including Oct. 31 is 10,256,704 net tons," says Gen. Poe, "and should the season be as long as usual the aggregate movement of freight through the canal will be about 11,000,000 net tons."

Of this total freight movement to Oct. 31 given by Gen. Poe, 7,198,817 net tons was east bound and 3,057,887 tons west bound. Following is the canal tonnage to Oct. 31 this season as compared with the total tonnage of 1890 and 1891:

	Net Tons.
1892, to Oct. 1	10,256,704
1891, full season	9,041,213
1890, full season	8,888,759

The principal items of freight included in this season's tonnage are shown by the following table:

Season of 1892, Months.	Coal, Net Tons.	Grain, Bushels.	Iron Ore, Net Tons.	Lumber M.Feet.
October	252,027	6,296,002	594,436	71,574
September	363,673	4,435,454	812,153	96,080
August	414,448	3,477,601	958,774	73,607
July	542,003	4,845,616	932,706	72,234
June	462,564	3,553,717	800,965	75,738
May	401,729	11,511,498	503,341	68,925
April	151,495	2,073,114	19,485	1,568
Total	2,687,939	36,193,002	4,621,860	459,721

In the following table a comparison is made of registered tonnage and number of vessels passing through the canal up to and including Oct. 31 this season as against the same period in 1891:

Month.	1892.		1891.	
	Number of vessels.	Registered tonnage.	Number of vessels.	Registered tonnage.
April	392	334,929	31	16,749
May	1,788	1,547,703	1,158	854,351
June	1,877	1,541,712	1,512	1,125,055
July	2,055	1,728,442	1,830	1,462,920
August	2,071	1,702,429	1,720	1,460,144
September	1,704	1,537,463	1,600	1,356,836
October	1,601	1,367,351	1,283	1,101,642
Total, Oct. 31.	11,488	9,760,029	9,134	7,377,697

Stocks of Grain.

The following table prepared from the Chicago Board of Trade report of the visible supply of grain on Saturday, the 12th inst., shows with comparisons stocks of wheat and corn in store at points of accumulation important to the lake traffic:

	WHEAT, BUSHELS.		CORN, BUSHELS.	
	Nov. 12, '92.	Nov. 5, '92.	Nov. 12, '92.	Nov. 5, '92.
Chicago	10,326,000	10,137,000	6,840,000	7,045,000
Duluth	7,276,000	6,251,000	.....	.....
Milwaukee	1,859,000	1,777,000	9,000	10,000
Detroit	1,196,000	1,190,000	37,000	30,000
Toledo	3,542,000	3,737,000	233,000	239,000
Buffalo	3,577,000	3,305,000	794,000	591,000
New York	15,288,000	14,956,000	1,370,000	1,721,000
Baltimore	2,253,000	2,149,000	319,000	340,000
Philadelphia	1,986,000	1,736,000	271,000	205,000
Boston	236,000	221,000	430,000	432,000
Montreal	449,000	493,000	17,000	18,000

The statement shows that at five lake shipping ports, Chicago, Duluth, Milwaukee, Detroit and Toledo, there is a net increase for the week of 1,107,000 bushels of wheat and a decrease in corn of 205,000 bushels, while at Buffalo and the five principal exporting ports on the seaboard, New York, Baltimore, Philadelphia, Boston and Montreal, there is a net increase in wheat of 929,000 bushels and a decrease in corn of 106,000 bushels.

How the Sault River is to be Lighted.

In answer to a request from the REVIEW for a copy of the report recently submitted by Gen. Poe and Commander Reed for lighting the St. Mary's river on a broad scale, Commander Coffin, naval secretary of the board, says:

"In view of the great commerce and the many dangers of St. Mary's river, the board directed the inspector and engineer of the eleventh light-house district to submit a plan for its further and more complete lighting, one which might as nearly as possible make its navigation as safe by night as by day. This plan has been received and considered, and the board has in in its annual report and estimates recommended that an appropriation be made by congress of $145,562, to enable the board to light the river properly, by a system involving the use of light-houses, light vessels, range lights, buoys and patrol steamers, and to maintain it for one year. While the general plan is kept steadily in view, details have not been decided. If the funds were now in hand, there would be no difficulty in reaching an immediate decision on every point. But as no funds can be had before midsummer, and no knowledge can be had until then, of the amount that will then be placed at the disposal of the board, it is deemed wise to leave questions of detail open. But the board is prepared to use all the funds that congress provides, to the best possible advantage for the commerce of the river, and at the earliest day practicable. Your kind offer to assist in the work of securing an appropriation for this purpose is highly appreciated. And after all, the matter is in your hands, and the hands of those whom you represent. All that the board can do is to provide the plan and submit it, with its estimate and recommendation, to cougress. This it has done. When congress provides the authority and the funds, the board will do the work."

Engines on Board a Man-of-War.

The following table is of some interest in showing the number of steam engines on board a modern man-of-war. It was supplied to Industry, a San Francisco journal, by Mr. G. W. Dickie of the Union Iron Works, and refers to the battle-ship Oregon.

Number of Engine Cylinders.	Purpose of Engines.	Type.	Diameter of Cylinder in inches.			Stroke in inches.
			in.	in.	in.	
6	Main driving, 9,000 horse power	Triple	34½,	48,	75	42
4	For air pumps	Double	6			12
4	For circulating pumps	Compound	7,	12		6
2	Hotwell pump engines	Single	8			16
2	Fire and bilge pump engines	"	10			16
2	Air and circulating pump engines	"	10			16
4	Ventilating fans	Compound	5,	9		6
4	Barring engines	Double	6			6
2	Reversing engines	Single	12			16
4	Hydraulic steering gear	Double	8			12
4	Main feed pumps	Single	12			16
4	Auxiliary feed pumps	"	10			16
8	Ash hoisting	"	5			6
16	Fire-room fans	Compound	5,	9		6
4	Steam cranes	Double	8			10
12	Hydraulic pumping	Single	20			30
8	Steam winches	Double	8			10
2	Windlass engines	"	16			12
8	Dynamo engines	Compound	7,	12		6
2	Ice machines	Double	12			16
8	Ventilation	Compound	5,	9		6
1	Distilling room air pump	Single	10			12
1	Water and brine pnmp	"	6			10

Shipbuilding in Five Cities.

Special Correspondence to the MARINE REVIEW.

WASHINGTON, D. C., Nov. 17.—The compilation of shipbuilding statistics for the year 1890 is now in progress in the census bureau. The work for the entire conntry is not complete but the following table, prepared from bulletins relative to the industry in five cities, will prove interesting:

	Number of establishments.	Capital.	Average number hands.	Aggregate wages paid.	Cost of materials	Miscellaneous expenses.	Value of products.
Cleveland, O.	8	$2,587,775	2,083	$1,188,662	$1,442,045	$ 73,921	$3,091,300
an rancisco, Cal.	21	1,835,898	1,316	1,066,958	1,300,375	253,127	2,645,716
Buffalo, N. Y.	14	1,106,517	569	403,642	311,650	25,212	1,012,095
Philadelphia, Pa.	20	1,291,776	709	447,772	433,573	36,889	959,128
Toledo, O.	4	227,060	362	196,590	182,225	5,390	408,100

In the next three months the navy will be increased by the addition of six new vessels, in commission and ready for service, representing nearly as many different types of war ships of modern construction, and all fine specimens of naval architecture and fighting machines. This will be the first time since the beginning of the building of a new navy that so many new vessels have been placed in commission practically at one time, and it will be the largest increase the navy has received from a numerical standpoint in one year since the war. The Bancroft, the new practice ship, will be placed in commission early in December, and sent to Annapolis for duty. The monitor Monterey at Mare island navy yard will be put in active service Jan. 10, and the gunboat Machias at Bath, Me., about the same time. The large twin-screw armored cruiser New York, the pride of the secretary and of the navy, will fly her pennant Jan. 31, and on the same day the Detroit will be placed in commission. On Feb. 28 the Montgomery will receive her complement of officers and men, and be ready for active service. All of these vessels, except the Monterey, will be kept on the Atlantic station until after the naval review in New York, when they will be sent to different stations.

Record of Speed and Big Cargoes.

[*Masters or owners of freight boats are invited to report improvements on this list.*]

Iron ore: Maritana, Minnesota Steamship Company of Cleveland, 4,260 gross, or 4,771 net tons, Escanaba to South Chicago; Maryland, Inter-Ocean Transportation Company of Milwaukee, 3,663 gross, or 4,103 net tons, Escanaba to South Chicago, draft 17 feet 4 inches.

Grain: E. C. Pope, Eddy Bros. of Bay City, 125,730 bushels of corn, Chicago to Buffalo; same steamer, 120,191 bushels of wheat, Chicago to Buffalo; Onoko, Minch estate, Cleveland, 113,839 bushels of wheat, Chicago to Buffalo; W. H. Gilcher, J. C. Gilchrist of Cleveland, 113,820 bushels of wheat, Chicago to Buffalo.

Coal: E. C. Pope, Eddy Bros. of Bay City, 3,950 net tons anthracite, Buffalo to Chicago.

Speed: Owego, Union Line of Buffalo, Buffalo to Chicago, 889 miles, 54 hours and 16 minutes, 16.4 miles an hour.

Iron Mining.

VALUE OF LEADING STOCKS.

Quoted by Chas. H. Potter & Co., No. 104 Superior St. Cleveland, O.

Stocks.	Par Value.	Bid.	Asked.
Cleveland-Cliffs Iron Company	$100 00	$.....	$ 63 00
Champion Iron Company	25 00	.....	45 00
Chandler Iron Company	25 00	.....	44 00
Jackson Iron Company	25 00	.....	75 00
Lake Superior Iron Company	25 00	.....	39 00
Minnesota Iron Company	100 00	.....	71 00
Pittsburgh & Lake Angeline Iron Co.	25 00	.....	145 00
Republic Iron Company	25 00	9 00	10 00
Ashland	25 00	.....	.....
Section Thirty-three	25 00	.....	4 00
Brotherton	25 00	2 00	2 50
Iron Belt	25 00	.....	2 10
Aurora	25 00	.....	10 00

Shipments of iron ore from Two Harbors up to and including Wednesday, Nov. 9, aggregated 1,123,224 gross tons, of which 637,588 tons were from the Chandler, 468,268 tons from the Minnesota, 2,525 tons from the Pioneer and 14,843 tons from the Zenith mine. On the same date shipments from Ashland aggregated 2,175,329 tons, of which 1,097,188 tons were from the Wisconsin Central docks and 1,078,141 tons from the Milwaukee, Lake Shore and Western docks. Shipments from Ashland to the date named are about 1,000 tons ahead of the entire shipments in 1890, the banner year, which aggregated 2,174,559 tons. In 1891 the total movement from Ashland was but 1,253,492 tons. Shipments of the different Gogebic range mines from Ashland so far this season are: Ashland 191,691 tons, Aurora 294,425, Colby, No. 2, 51,805, Rand 17,700, Tilden 229,022, Colby No, 1, 6,172, Iron Belt 157,994, Montreal, south vein, 3,383, Montreal, north vein, 37,203, Palms 93,104, Section 33, south vein, 10,432, Section 33, north vein, 4,248, Anvil 6,716, Brotherton 95,132, Comet 38,990, Carey 51,457, Imperial 6,925, Norrie 418,303, Newport 131,023, East Norrie 174,488, Odanah 6,132, Pabst 56,155, Jack Pot 3,943, Eureka 8,317, Sunday Lake 49,312, Windsor 31,227.

During the first month's operation of the eight-hour system at the Lake Angeline mine there was a gain of ore produced amounting to 730 pounds per day for every man employed in and about the property, miners, trammers, laborers, firemen, engineers, superintendents and the entire force. These figures are placed against the best secured for any previous month in the year. Besides giving the company that much ore per man it also shows an increase in earnings to the men of something over $1,500.

One of the latest stories from the Mesaba recounts details connected with the discovery of ore by a party of miners who found difficulty in getting good water near their camp, and were sinking a well on a slight elevation some distance from the mine workings.

Officers of the Iron Range & Huron Bay railway, upon which the rails have all been laid between Champion, Mich. and Huron bay, Lake Superior, say that they will immediately begin a survey for an extension of the line to Ishpeming and Negaunee, Mich.

ST. MARY'S RIVER CHARTS NOS. 1 AND 2 FROM POINT IROQUOIS TO E. NEEBISH AND FROM MUD LAKE ENTRANCE TO E. NEEBISH, CORRECTED TO AUG. 30, 1892, CAN BE HAD AT THE OFFICE OF THE MARINE REVIE W, 516 PERRY-PAYNE BUILDING, CLEVELAND, FOR 20 CENTS EACH, OR BOTH BY MAIL FOR 50 CENTS. BOTH CHARTS WILL BE FURNISHED WITH CLOTH BACKS AND BOUND EDGES FOR $1.

Lake Carriers' Association.

M. A. BRADLEY, President.

VICE-PRESIDENTS: James W. Millen, Detroit, Mich. — John G. Keith, Chicago, Ill.; Frank J. Firth, Erie, Pa. — W. S. Brainard, Toledo, O.; Thomas Wilson, Cleveland, O. — R. P. Fitzgerald, Milwaukee, Wis.; Peter F. Miller, Buffalo, N.Y. — Alex. McDougall, Duluth, Minn.

Charles H. Keep, Secretary, Buffalo, N.Y. Geo. P. McKay, Treasurer, Cleveland, O.
Harvey D. Goulder, Counsel, Cleveland, O.

SECURE NAMES OF DEPARTING CREWS.

As a result of the recent serious disasters through which the entire crews of at least three vessels have been lost, there is a renewal of the demand for some system of registering sailors at the port of departure, so that in case of an accident to any vessel involving the loss of life there will be no difficulty in securing a full list of the crew of such vessel. Many members of the Lake Carriers' Association have given this matter serious thought since the loss of the steamer W. H. Gilcher, regarding the crew of which there is as yet only meager information, and they are of the opinion that unless the association adopts measures whereby this difficulty can be largely removed, the vessel owners will find themselves confronted later by the passage of a law that may cause delay in port that will be far more troublesome than a system through which masters might send to owners full lists of their crews just before leaving port. Some lake newspapers are advocating the passage of a law compelling vessel masters to furnish collectors of customs with names of their crew before each departure up or down the lakes. Such a law would not be impracticable, but it would be a source of great annoyance, as masters are often on the pilot house ready to signal the engines to go ahead when the last man is put aboard. In such cases, which are not numerous, a list of names which would be almost complete could be furnished to the owner, and would serve all practical purposes, although it would not meet the requirements of law and would only add to delay in port if the names were to be turned over to a collector of customs. As it is now, everybody will admit that in nine cases out of ten the owners or agents of lake vessels have the names of only master or chief engineer when the vessel leaves port. Sometimes the first mate is known, but rarely is there any knowledge of other members of the crew. Vessel owners will do well in taking early action on this subject. If they are met with a law of the kind spoken of here their defence will be very feeble as against the humane side of the question.

As a result of numerous accidents recently in the vicinity of "Death's Door," entrance to Green bay, the association a short time ago repeated a request to Superintendent Kimball of the life saving service that a life saving station be established in that locality at once. In answer to this latest request, Horace L. Piper, acting superintendent, says in a letter to Treasurer McKay: "I am glad to be able to inform you that a site has been selected for a life saving station on Plum island, and it is hoped that the station can be erected next year."

In General.

For a given displacement a wooden ship is heavier than an iron one. The carrying capacity of the former is said to be five-ninths of the displacement, whilst in iron ships it is 15 per cent. more.

The new Cunard racer Campania will possess engines arranged in a novel fashion, and yet designed to develop 28,000 horse power. They are worked on the triple expansion system, but the forward and after cylinders are tandem. In the conveyance of steam the exhaust is from the two high pressure cylinders on top of the forward and after cylinders to the intermediate cylinder, and thence to the forward and after lower cylinders.

The Maritime Register of New York says: "We are glad to see that the shipbuilding firm of Dialogue & Son, of Camden, New Jersey, has contracted to build a steamer for the trade on the Orinoco river. Every vessel built in this country for the river trade of South America is the best evidence of the capabilities of American ship yards and will help materially to lead foreign ship owners to try American work. We hold that there is a great market in river navigation of tropical countries for American shipbuilders." It might be well to add in connection with this opinion from the Register that only a short time ago F. W. Wheeler & Co., shipbuilders of West Bay City, Mich., sent from their yard to Central America a tug, the Yulu, for river service.

MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

JOHN M. MULROONEY, ... } PROPRIETORS.
F. M. BARTON, ... }
HOMER J. CARR, . . . Associate Editor and Manager Chicago Office, Western Union Building, 110 LaSalle Street.

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WHEN it was announced a few days ago that District Judge Swan of the United States court, Detroit, had handed down a decision dividing damages in the Conemaugh-New York collision case, an expression of surprise was heard from vessel owners and masters who were acquainted with the testimony as presented to the court in Detroit last winter. It was generally known that the owners of the Conemaugh had made a very good case, while the owners of the New York did not call a single witness. In advance of the full text of opinion from the court, the decision was proclaimed a great victory for the owners of the New York, but now that the written decision has appeared it is not surprising that the attorneys for the New York did not present testimony. In reviewing the case the court seems unable to find language severe enough in condemnation of the action of the master of the New York, but still reluctantly orders a division of damages, because the Conemaugh did not stop and back. This conclusion is recorded against equities in the case most strongly in favor of the Conemaugh and against warm words of praise for the actions of the master of that vessel throughout every movement leading up to the collision, and also for his testimony on the witness stand. The case will be appealed, and it is not the place here to criticise any part of the decision, but it does seem that even though Judge Swan may not be upheld by higher authority in the extreme position which he has taken in trying to enforce the great commandment of the law of navigation which calls a halt when risk of collision is inevitable, his action should result in great benefit to the men who are entrusted with the care of lake vessel property. Every vessel master on the lakes should read and study with great care this decision, which appears in full on another page.

JUST seventy-three lives were lost in five lake disasters this season, and forty-four of them must be charged to the strange accidents befalling the two large steel steamers. This is an awful record, demanding most careful consideration from all owners and builders of ships. Were it not for the terrible loss of life, it would be agreed on all hands that the sinking of half a dozen steel vessels would amount to only a trifle as against the benefits to be derived from improved construction. In all parts of the world these lake accidents have been and are now being discussed. Some of the English newspapers have printed most rediculous statements about the lost steamers and about lake navigation in general, the whole being accompanied by the usual boast of British superiority, notwithstanding the numerous statements from Lloyds about missing ships. Great Britain with her tramp steamers still countenances a very large amount of defective construction at home, and would do well to withhold criticism in the case of lake vessels, but this can not be taken as an excuse for either builders or owners here, and it will not be so taken. Progress already made toward strengthening steel steamers now in commission and adding materially to the weight of all new boats, is sufficient to prove that owners can no longer get lightly constructed boats of the class built within the past two years; they can no longer add at one stride 20 to 40 feet to the length of a steamer without increasing her proportions otherwise and adding strength to every portion of her construction. Builders can no longer entrust their business to such methods. Changes in some of the steel stamers launched recently will, it is claimed, come very high, but they must be had, and that at once.

Important Decision in the Conemaugh-New York Case.

Judge Swan of the United States district court, Detroit, has given out a written decision relative to the Conemaugh-New York collision, which occurred in the Detroit river on the evening of Oct. 21 of last year, and through which the Conemaugh was sunk. For various reasons it is the most interesting opinion as yet handed down by the new judge. Notwithstanding the division of damages, the court scored the New York in very strong terms, and in this regard the opinion is most important. In answer to the libel filed by the owners of the Conemaugh, the owners of the New York filed a cross libel, also claiming damages for injuries received. The cases were heard as one, no proofs being offered by the New York. Circumstances attending the collision were as follows:

The Conemaugh was on her way down the lakes from Milwaukee with flour. Between 7 and 8 o'clock on the evening above mentioned, the night being clear and the weather fine, she had reached the vicinity of the remains of a coffer-dam used in raising the sunken steamer Kasota, on the American side near midchannel and about three-quarters of a mile above Smith's coal docks. At this point the Conemaugh received a signal of two blasts from the whistle of the steamer Burlington, which was bound down, having a tow of four vessels, and at that time was rounding to at Smith's coal dock for fuel. The Burlington and tow in their evolution formed a crescent, whose westerly point was the coal dock, while its easterly end was further up the river and near the Canadian shore. The Conemaugh answered the Burlington's signal with two blasts, her helm was put hard-a-starboard, her speed immediately checked and she swung across the stream a short distance below the Kasota piles. Finding that she was heading above the stern vessel of the tow, the Conemaugh's wheel was steadied and then ported to follow the tow, which in circling around occupied most of the navigable channel, leaving a passage on the Canadian or tow's port side.

About simultaneously with the steadying of the Conemaugh, her master saw below the tow and about a mile away, the bright red light of an ascending steamer, which proved to be the New York, then somewhat on the American side of midchannel, and promptly gave her a passing signal of two blasts. The New York made no answer. When the two steamers were about three-fourths of a mile apart, the Conmaugh repeated her signal, the New York then showing her masthead and both colored lights. No reply was made by the New York to the second signal. The last barge in tow was a little forward of the starboard beam of the Conmaugh, 800 or 900 feet below her, and the same distance from the Canadian shore, when the Conmaugh sounded a third signal of two blasts. The New York made no answer to the Conmaugh's third signal, nor did she reduce her speed. About this time, the Conemaugh, still running under check, steadied from the port helm and almost simultaneously lost the green light of the New York, whereupon she sounded an alarm of several short blasts of her whistle, and put her wheel hard-a-starboard. The New York,running at full speed, was then about midway between the third and fourth barges of the tow, while the Conemaugh had just crossed the wake of the stern barge,the Ferguson. The two steamers were then on converging courses, about a quarter of a mile apart. The Conemaugh kept on at full speed with her wheel hard-a-starboard, showing the New York her masthead and starboard lights only, while the New York came up the river, still at full speed, under a port wheel, displaying her masthead and port lights to the Conemaugh. Just before the collision, which naturally resulted from these coures, the wheel of the New York was starboarded, but too late to avert the collision, and stem on she struck the Conmaugh on the starboard bow, sinking her within ten minutes. The vessels came together on the extreme easterly side of the channel, scarcely a length from where the Conemaugh sank and about the stern from and a little on the port quarter of the Ferguson, 1,000 feet barge of the Burlington's tow.

The answer of the owner of the New York admitted that her watch heard neither the first nor second signals of the Conemaugh. It further stated that "when the New York had arrived at a point abreast of the last barge in tow of the Burlington, a signal of two whistles was heard, but being unable to see any vessel, and noticing only a white light close on the Canadian bank of the river, the signal of two blasts was not answered, as it seemed intended for some other vessel." It was also alleged that the speed of the New York in passing the tow was but four miles an hour. The proofs, however, established that she maintained double that speed until the vessels came together.

"The faults of the New York are so many and flagrant,"

said Judge Swan in rendering his opinion, "that it may be doubted if judicial records afford a parallel to the negligence and recklessness of her navigation. The admitted facts that her officers did not hear the first two signals of the Conemaugh and, though her attention was challenged to her by her third whistle, did not see her until the alarm whistles were sounded, when the vessels were scarcely a quarter of a mile apart, although the weather was favorable to sight and hearing, and the condition of the locality called for careful navigation, are conclusive that her master and lookout (if she had one) were either incompetent or grossly negligent of their duties. Even after the Conemaugh was seen and heard, the action of the New York merits the severest condemnation. Invoking against the Conemaugh steering and sailing rules 19 and 21, the New York neither held her course as required by the first, but by porting thwarted the effect of her adversary to keep out of her way, nor slackened speed, stopped or reversed in compliance with rule 21, when the course, position, lights and alarm whistles of the Conemaugh proclaimed the perilous proximity of the steamers, but kept her speed to the very instant of the collision. Under the circumstances, these offenses were scarcely less vicious than the criminal negligence which disregarded the lights and signals of the Conemaugh. The temporary departure of the New York from her general course up the river was necessitated by the position of the Burlington's tow. When she passed that and saw the Conemaugh, it was her duty to starboard and resume her course as soon possible, having regard to the exigences of the situation. There was ample room for her to have obeyed this requirement, which would have taken her under the stern of the Conemaugh. The maseter of the Conemaugh had a right to expect that this plain duty would have been performed, for his vessel had then crossed the proper path of the New York.

"A fitter case for the exercise of disciplinary power committed to the inspectors of steam vessels than that afforded by the navigation of the New York can scarcely be imagined. Revocation of the license of the master or an extended period of suspenslon would have a salutary effect in promoting the safety of life and property on the lakes. The case of the New York is without the shadow of a defense. These steamers were navigating in a crowded channel, and that fact exempts the Conemaugh from the obligation to port under pilot rule 2. The New York in coming up necessarily held her course close to the descending tow, passing within 50 or 100 feet from the fourth vessel, and only attained that distance by a sharp sheer to the starboard when abreast of the third vessel in the tow. At that time the Conemaugh was under the stern of the Ferguson. She had crossed the New York's proper course, and the position of the latter in reference to the Burlington's tow left her no room to pass between the New York and the tow. There was, moreover, an unobstructed channel, 600 or 700 feet wide, on the starboard side of the New York. The Conemaugh also had a right to assume that the New York on clearing the tow would perform her duty and resume her normal course. Under these circumstances the Conemaugh with three-fourths of the channel occupied by a tow, though crossing the course of the New York, was not under the rule of port helm, but might properly continue her course provided there was time and room for that maneuver. Had the New York, after seeing the Conemaugh, even held the course on which she was passing the tow, collision would have been impossible, though she had maintained her full speed. Up to the Conemaugh's second signal, her navigation had been cautious and in exact conformity to the statutory and inspectors' rules. Even to the giving of her third signal, the only criticism made on her conduct is based on inspectors' rule 3, that, though under check, she was not 'slowed to a speed barely sufficient for steerage way,' although the vessels had then approached within half a mile of each other, and no understanding had been established with the ascending boat. This, however, though an infraction of that rule, had no relation to the collision, for the vessels were then so far apart and on such courses and held such relative positions to each other and to the tow, that without risk of collision the Conemaugh would have safely crossed the bows of the New York, had the latter held her lawful way.

"But when the New York shut in her green light, its disappearance announced and the alarm whistles of the Conemaugh acknowledged risk of collision, which imposed on each in their then dangerous proximity the duty of stopping and reversing. Both were knowingly under the operation of rule 21, on courses involving risk of collision. The fact that the New York had not responded to either signal, but was drawing near at full speed, with the eyes and ears of her watch closed to the presence and purpose of the Conemaugh, despite the warnings of her lights and signals, called for the extremest precautions on the part of the latter, and should in some measure have prepared her for the necessity of their instant adoption. The presumption of law is that the non-observance by the New York of the rule requiring that passing signals by whistle shall be given and answered when steamers are passing or meeting at a distance of half a mile of each other was not willful. The prevalence of the illegal practice of violating that rule should under no circumstances be received to excuse non-compliance with articles 21 and 24 of the steering and sailing rules. If it was prudent to check speed when approaching a tow moving in the same direction, the necessity of still greater care when she was about to meet and cross the course of a steamer rushing up the river at full speed in evident ignorance of the presence of a descending vessel, was infinitely more obvious and urgent. Though not called upon to stop when no response was made to her passing signal, because she had the tow between herself and the New York, and there could be no collision while that was the case, yet when the Conemaugh emerged from that shelter she did so with knowledge, or at least reason to believe that her presence was unknown to the New York, and that the safety of her advance was contingent on the latter's adherence to her course. This, though probable, was not assured. because the Conemaugh apparently was not a factor in her navigation. The Conemaugh, therefore, could not safely proceed in the expectation that the New York would obey rule 19, and hold her course in the absence of knowledge on her part that there was a vessel in the vicinity to whom she owed that duty. The steering and sailing rules governing the course of vessels meeting in various situations contemplate that each knows the facts upon which it is called to act. These rules are all qualified by article 24, which enjoins due regard to the dangers of navigation, and special circumstances rendering departure from them necessary to avoid immediate danger. There could scarcely be a greater danger of navigation than a large steamer approaching at full speed in the night, in apparent ignorance of the presence of another. Each of such vessels is a menace to the safety of the other, because co-operation to a safe course is impossible. Under such circumstances rules 21 and 24 are of paramount force. They condemn the effort of the Conemaugh to cross the bows of the New York without first obtaining recognition, and for failing to stop and reverse in so grave a peril as that produced by the New York's speed and change of course. And they and rule 19 condemn the New York for changing her course and failing to stop and reverse, when she saw the Conemaugh. In such a situation failure to stop and reverse is almost an unpardonable sin against the maritime code. The fact that the Conemaugh was struck abreast of the pilot house, about thirty feet abaft her stem, is persuasive at least that, had she stopped, she would have escaped the blow inflicted by the New York, though the New York might not have been so fortunate.

"The severe rule which makes the transgression of the statutes *prima facie* a contributing cause is, however, not infrequently relaxed, and the most forcible consideration urged for the acquittal of the Conemaugh is founded on the indulgeuce of the courts to an error committed by a vessel which has been brought into immediate jeopardy by the fault of another. In such a case, the injured party is not debarred from the recovery of damages if his vessel has done something wrong and has not been maneuvered with perfect skill and presence of mind.

"The equities of the case are so strongly in favor of the Conemaugh that the conclusion that she was also in fault has been reached with reluctance, and not without considerable doubt, in view of the extent to which adjudged cases of high authority have gone in referring collisions, in circumstances not unlike these, solely to the fault of the flagrant transgressor. The great disparity of fault has invited and received the consideration it merits. But the impossibility of enforcing the 'great commandment' of the law of navigation, which calls a halt, when risk of collision is involved compels me to adjudge both vessels at fault."

The lawyers in the case were Messrs Shaw and Wright of Detroit and H. D. Goulder of Cleveland for the Conemaugh, and Charles E. Kremer of Chicago and H. C. Wisner of Detroit for the New York.

Louis L. Burton, whose death is announced from Chicago, was the only son of J. C. Burton of Detroit. The deceased was from boyhood associated with his father in the insurance business in Detroit. Last spring he went to Chicago as general agent of the Cincinnati Underwriters, and organized the firm of Burton, Calbick & Cook, vessel and insurance agents.

Next season the harbor tugs of the Inman line will be divided between Duluth and Superior with offices in both cities.

As a first cargo the steel steamer Thomas Maytham, built by the Chicago Ship Building Company, took 111,282 bushels of corn from Chicago to Buffalo.

Capt. A. D. Hand has placed the tug J. V. O'Brien at Conneaut harbor for regular towing service, and in the spring will add a larger tug, which will be built this winter. The O'Brien is a first class tug, and is able to take care of vessels going to this new harbor, no matter how heavy the weather.

John D. Baker of Cleveland has begun suit for a settlement of accounts with W. H. Baker of Detroit, with whom he was interested last season in raising the schooner S. B. Pomeroy on Lake Ontario and the David Stewart on Lake Erie. Plaintiff says that his partner has taken most of the profits and invested it in the steamer S. C. Clark.

About Jan. 1 the Buffalo Furnace Company, which has secured the plant of the old Union Iron Works at Buffalo, will begin making pig iron at the rate of about 250 tons daily. Members of the firm of M. A. Hanna & Co., Cleveland, control this furnace, which will make mainly foundry iron. Machinery in the old mills has been torn out and the main building converted into a storage house, which already contains a very large quantity of iron ore, shipped by lake direct to the premises this season.

Capt. Vincent of the schooner Columbian, expresses his gratitude to the captain and crew of the Middle island life saving station. The schooner was lying under the island when the City of Naples dragged anchor and ran into her and started her leaking. The crew came through the boiling surf of that Friday's gale and boarded the schooner, pumping all night. In the morning they took the captain to Presque isle, from which place he sent word to a tug. This is not the first report of the good work of this crew.

It is not generally known that all but two bodies of crew and passengers lost from the steamer Western Reserve have been recovered. Both of the life boats were also found and are now being used by the keeper of the life-saving station who rendered valuable assistance in recovering and caring for the bodies that were washed ashore. The life boats are as good as new and the life savers say they are good sea boats. All this proves conclusively that Wheelman Stewart, who was of the opinion that the metallic boat sank immediately after leaving the steamer, was mistaken, and that both boats with their unfortunate occupants reached the shore but were capsized in the breakers.

Notices to Mariners.

On or about Dec. 10 the light at Grand Haven light station, on the bluff at the south side of the mouth of Grand river, eastern shore of Lake Michigan, will be changed from a fixed white light varied by a white flash every ninety seconds to a fixed white light varied by a white flash every minute.

On or about Dec. 8 the light at St. Joseph light station, on the bluff in the city of St. Joseph, eastern shore of Lake Michigan, will be changed from a fixed white, varied by a white flash every ninety seconds, to a fixed white varied by a white flash every forty-five seconds. The order of the light will not be changed.

On or about Dec. 12 the light at White River light-station, on the south side of the entrance into White lake and river, eastern shore of Lake Michigan, will be changed from a fixed white light varied by a red flash every minute to a fixed white light varied by a red flash every forty seconds. The order of the light will not be changed.

PATTERSON'S NAUTICAL DICTIONARY ($5) AND THE MARINE REVIEW ($2) BOTH TO ANY ADDRESS IN UNITED STATES OR CANADA FOR $6. IF YOU ARE NOT SATISFIED WITH THE DICTIONARY THE REVIEW WILL REFUND THE MONEY.

Trade Notes.

The King Bridge Company of Cleveland has the contract for the iron work for the new building for the Brown-Bonnell Iron Company of Youngstown. The foundations for the new structure are nearly completed, and the work of erecting the buildings will begin as soon as possible.

The Electrical Engineer of New York, date of Nov. 9, contains a full description of the electric light equipment on United States light-ship No. 51, one of the four steel boats recently built by F. W. Wheeler & Co. of West Bay City, Mich. This vessel, now stationed at Cornfield point in Long Island sound, is the only electrical light-ship in the world.

English exchanges report that the two new Inman Line cargo boats ordered on the Clyde are intended to have Serve tubes. As the line has had the Pennsylvania running for some time with Serve tubes, these have evidently given satisfaction. Whilst the interest in this tube is increasing with marine engineers, the same appears to be the case with locomotive engineers.

At Ottawa, Ont., the Ahearn electric heater has proven such a success that it is being adopted in drug stores, barber shops and for domestic use. The generating in the main station is done by water power and thus the heat is furnished at moderate prices. There is no objection, except the cost, and there are many features of comfort in the use of this heater on steam yachts furnished with electric lighting plants. It takes 4 amperes of current at 110 volts to heat a 10 by 18-foot cabin. The Rail way Equipment Company, Pullman Building, Chicago, is sole manufacturer of the heater.

Niagara Falls is equal to 16,000,000 horse power.

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UNITED STATES ENGINEER OFFICE, Grand Rapids, Mich., November 8, 1892. Sealed proposals for pier construction at the harbors of Muskegon and Grand Haven, Mich., will be received at this office until 10 a. m., on December 1, 1892, and then publicly opened; and proposals for like work at the harbors of Manistee and St. Joseph, Mich., and Michigan City, Ind., will be received at this office until 10 a. m. on December 2, 1892, and then publicly opened. Specifications, blank forms and all available information will be furnished on application to this office. WILLIAM LUDLOW, Major of Engineers, Bvt. Lieut. Col., U. S. A. 17-24.

UNITED STATES ENGINEER OFFICE, Burlington, Vt., October 24, 1892. Sealed proposals for blasting and removing 360 cubic yards of rock shoal, situated between Sistar Islands and Cross-Over Light, St. Lawrence River, N. Y., will be received at this office until 10 a. m., November 24, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office. 27-3-17

U. S. ENGINEER OFFICE, HICKOX BUILDing, 185 Euclid Avenue, Cleveland, Ohio, November 1, 1892. Sealed proposals for dredging in straight channel through Maumee Bay, for Toledo Harbor, Ohio, will be received at this office until 2 p.m. of Thursday, December 1, 1892, and then publicly opened. Specifications, blank forms, and all available information will be furnished on application to this office. JARED A. SMITH, Corps of Engineers, U. S. A.

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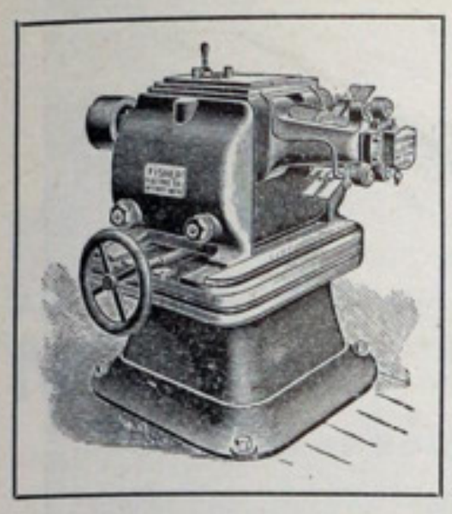

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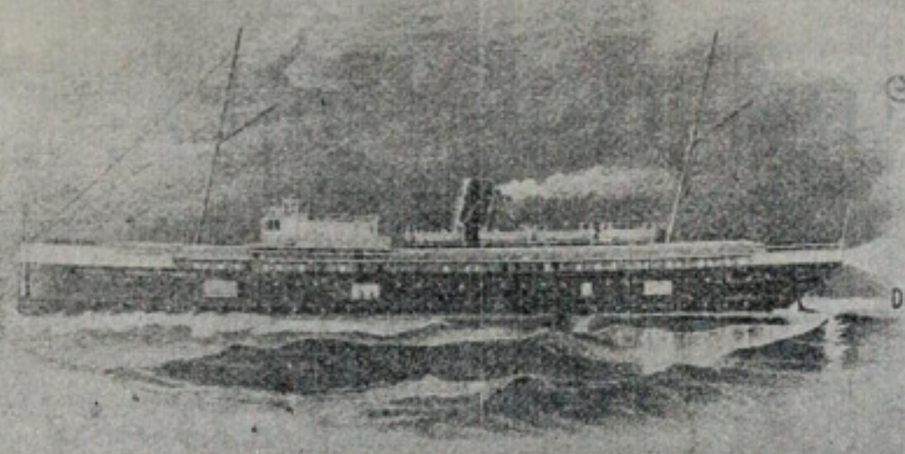

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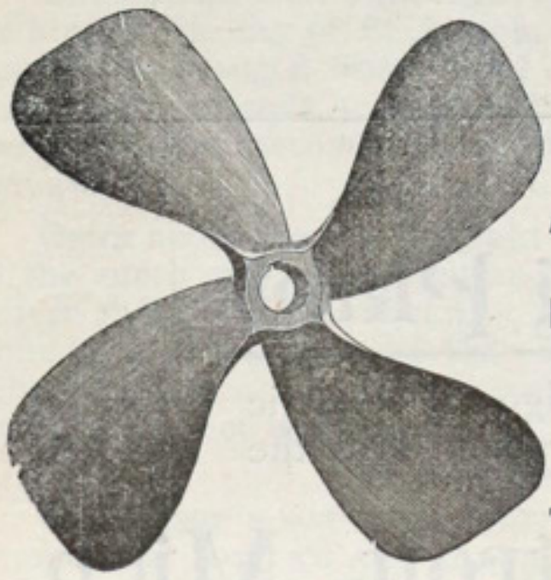

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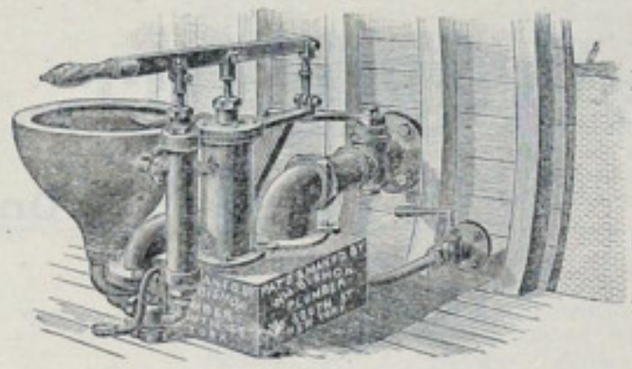

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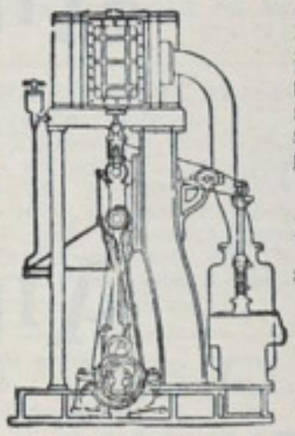

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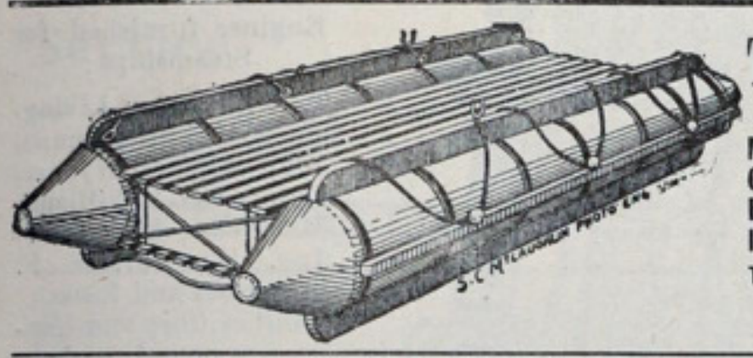

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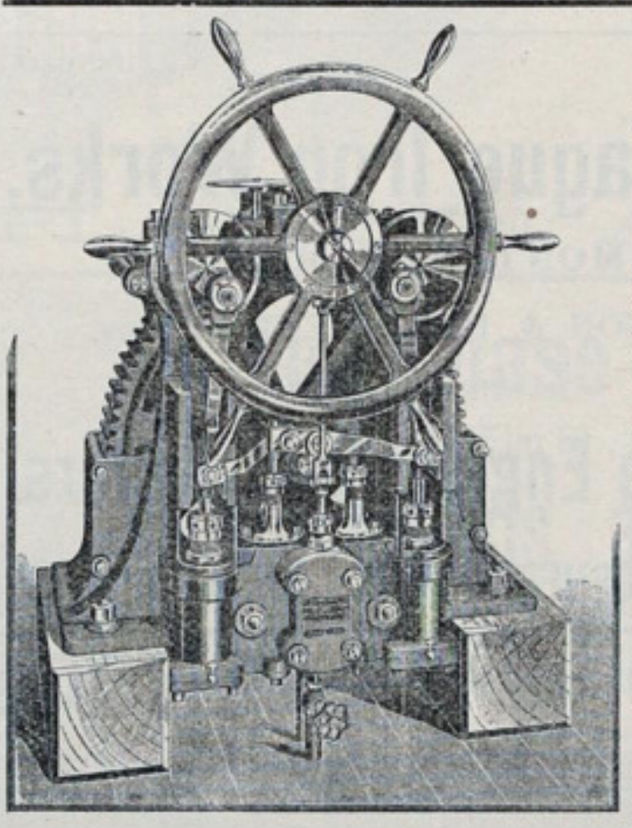

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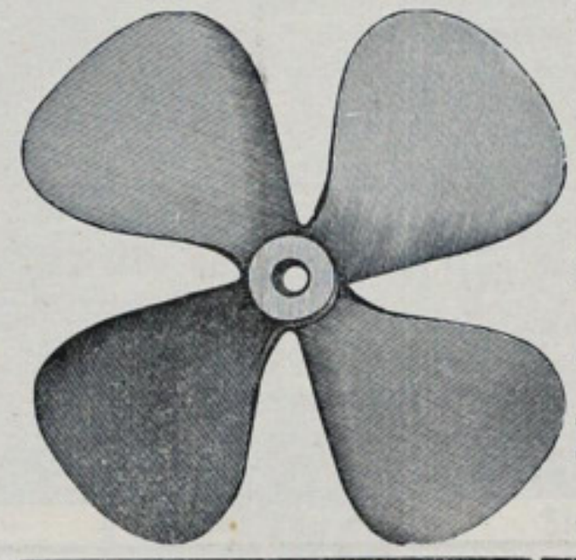

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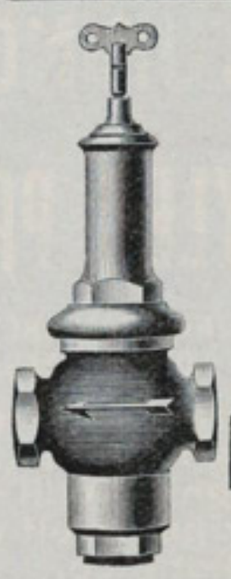

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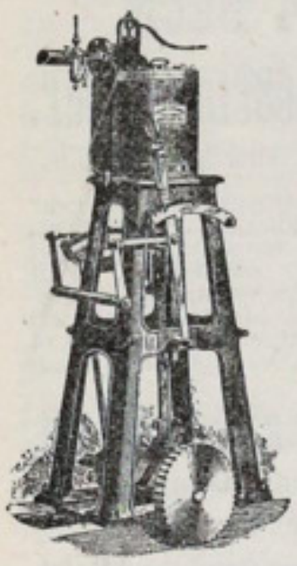

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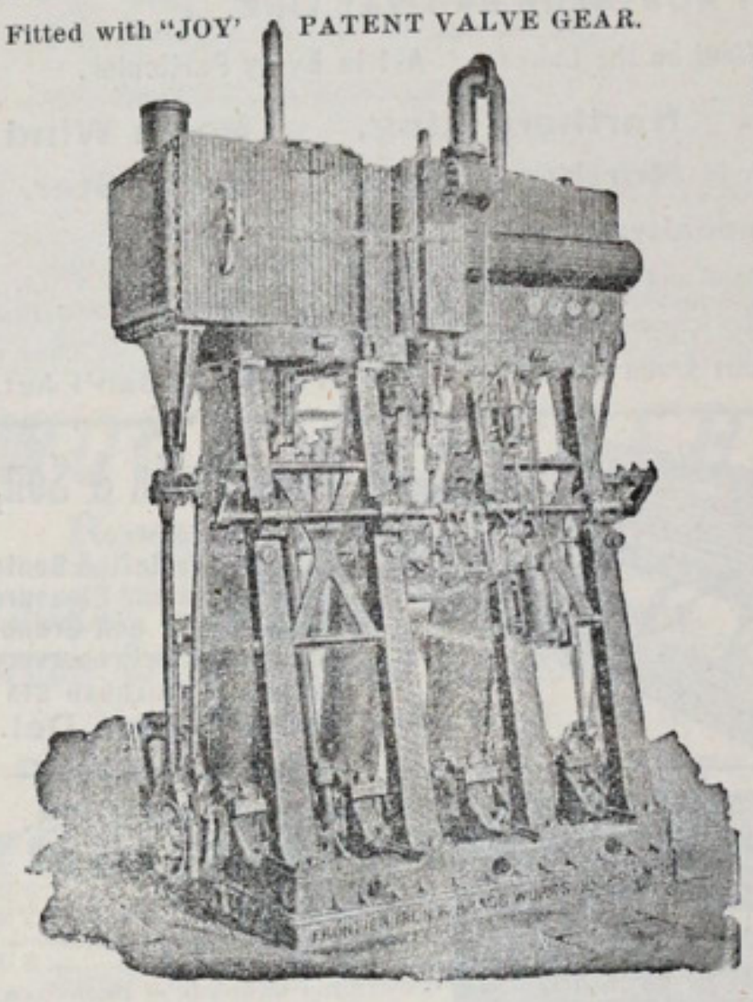

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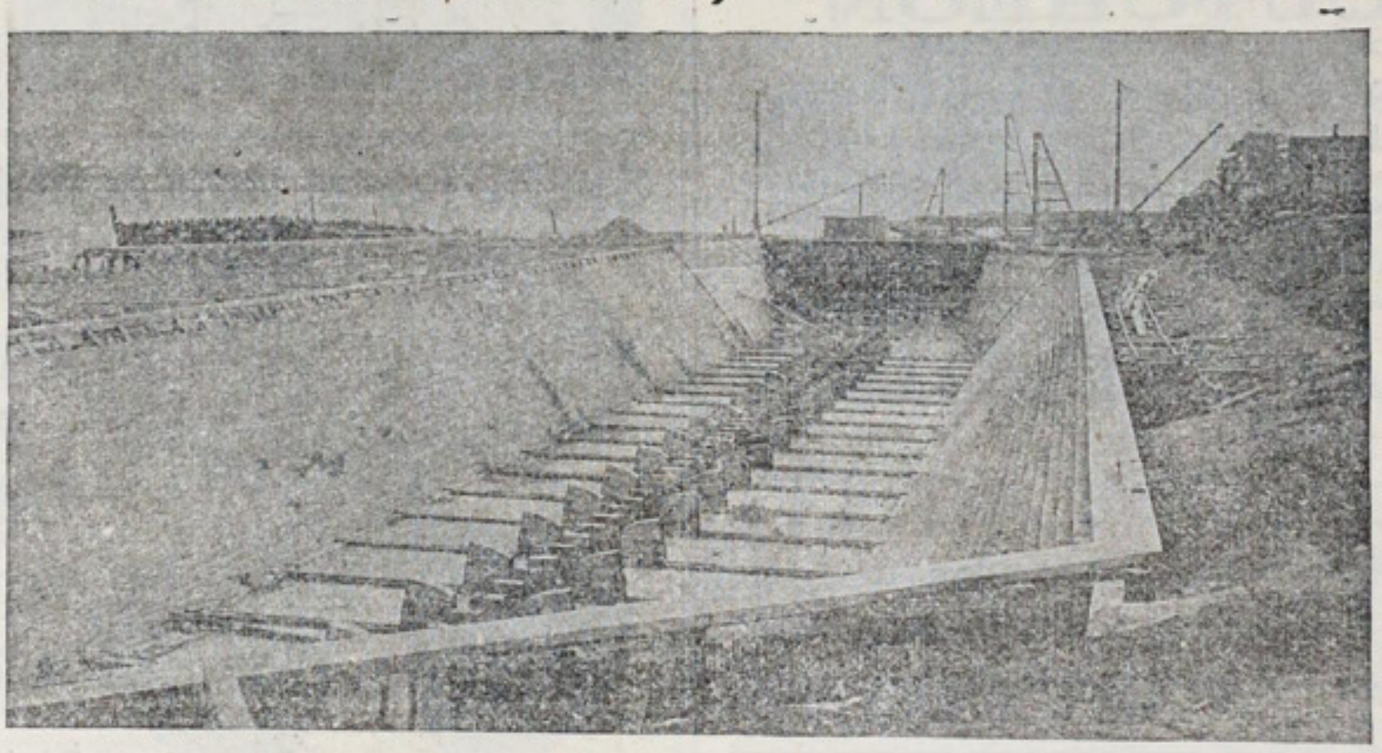

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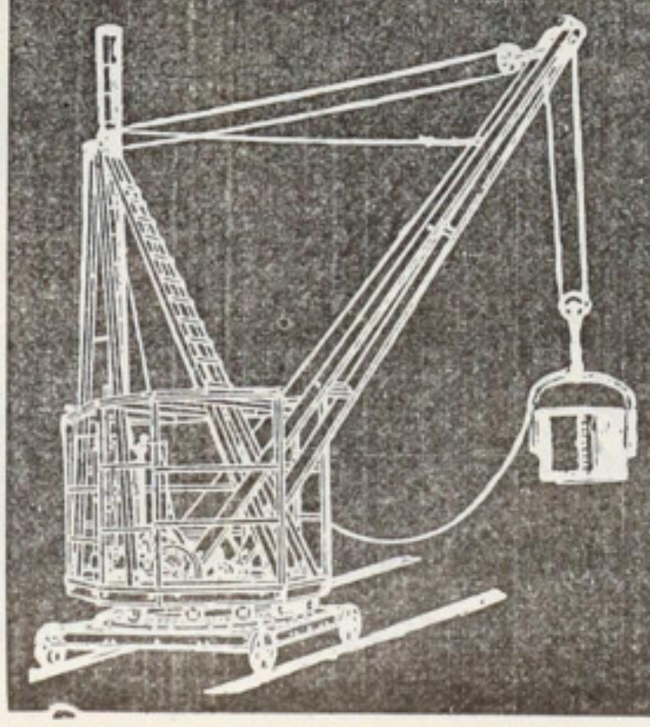

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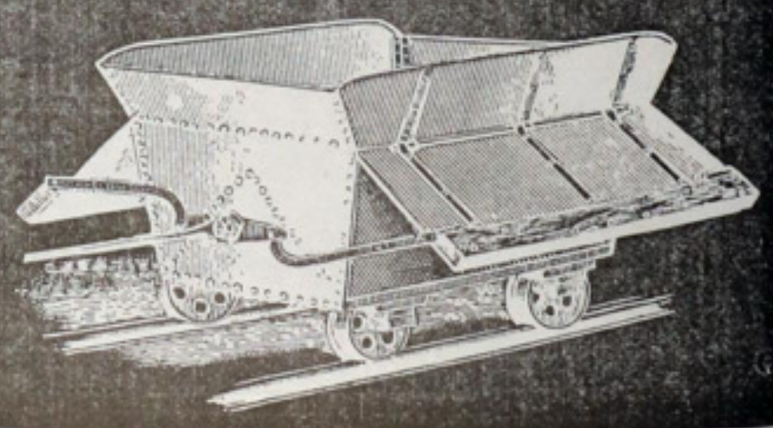

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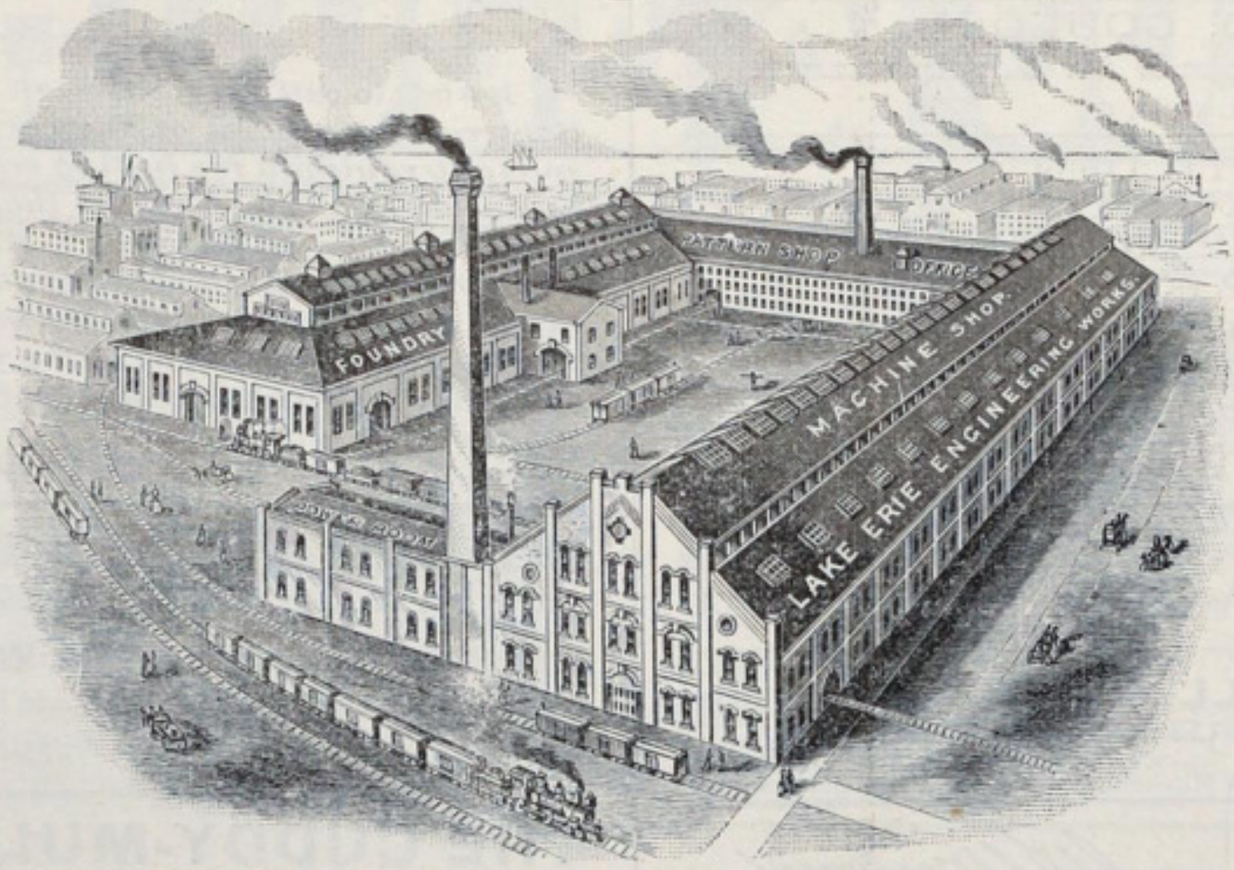

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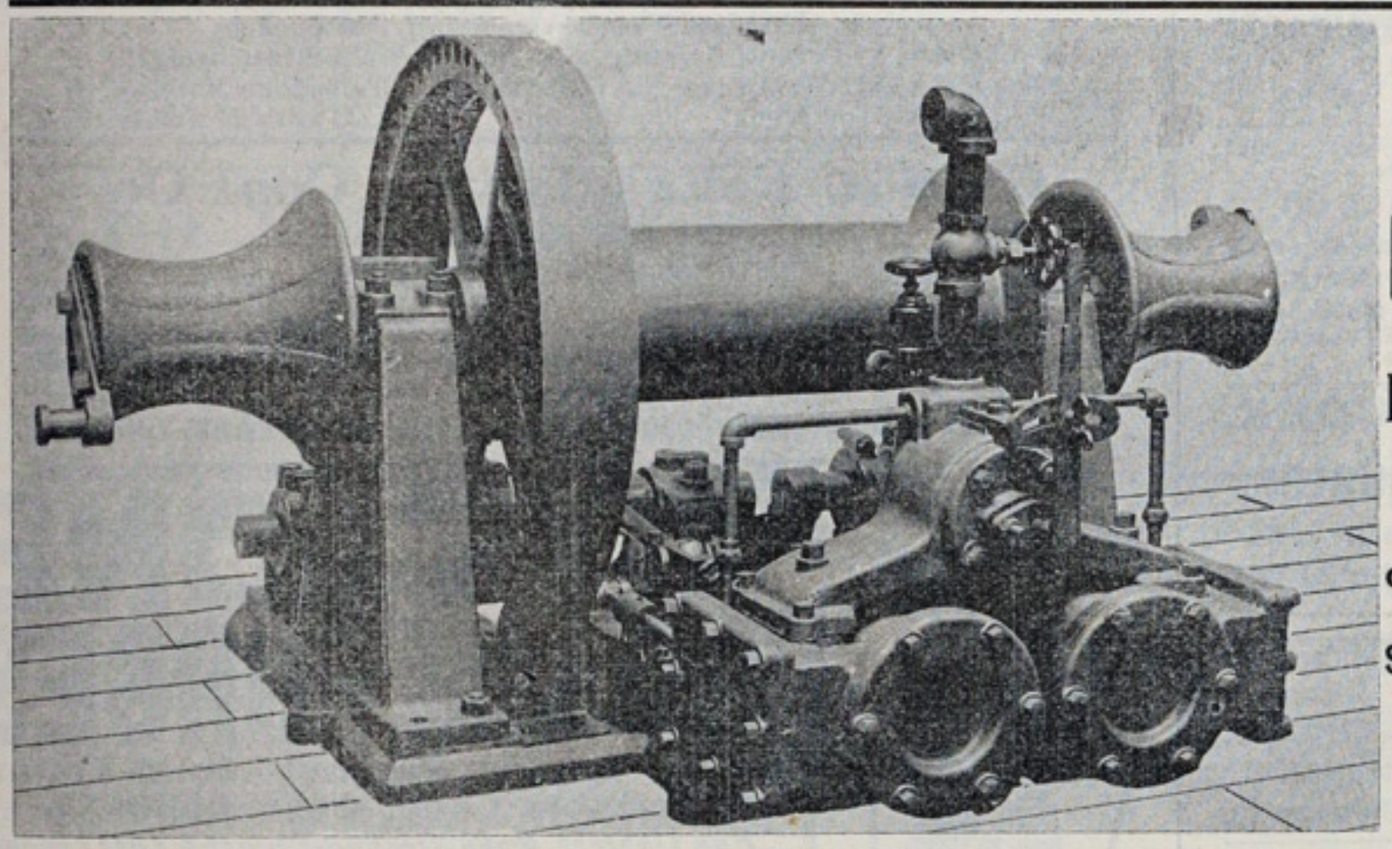

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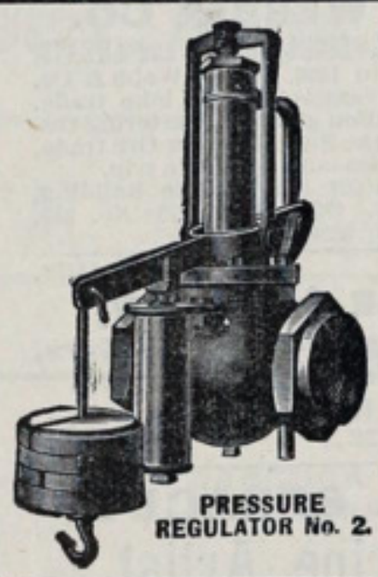

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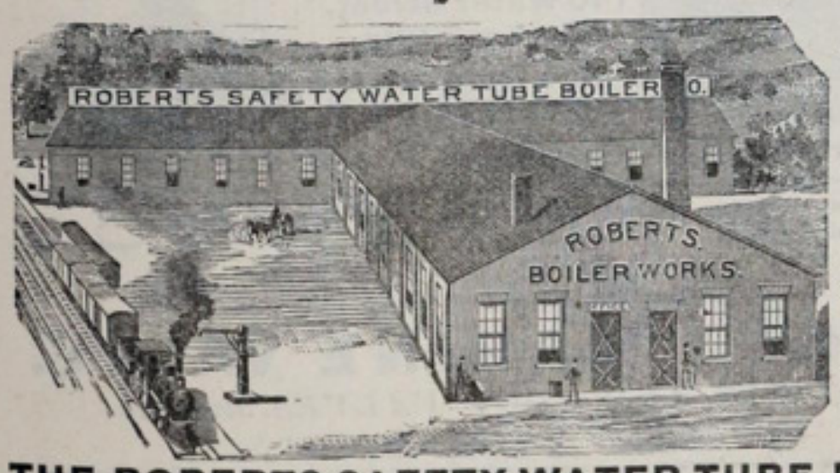

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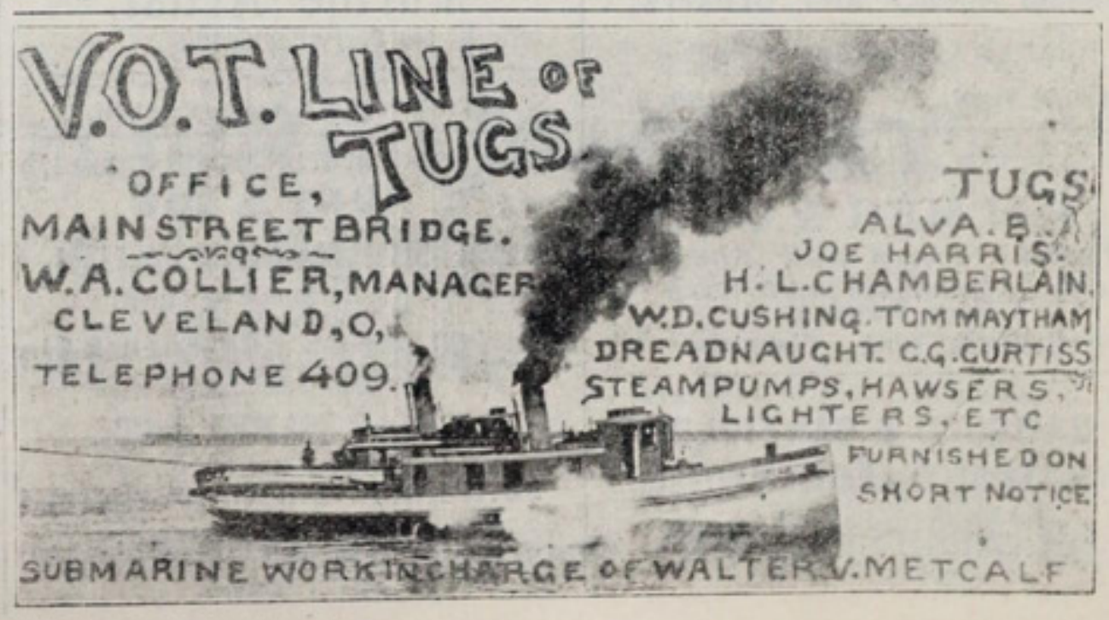

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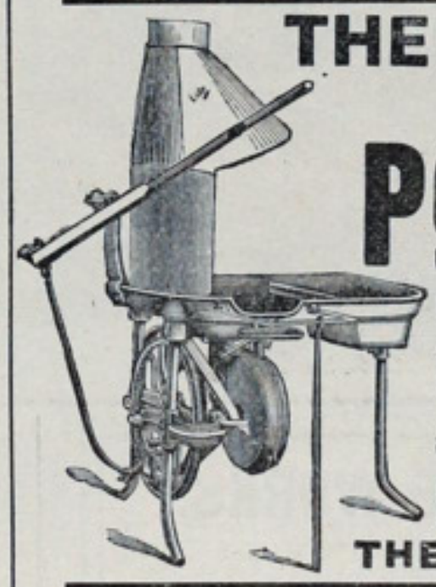

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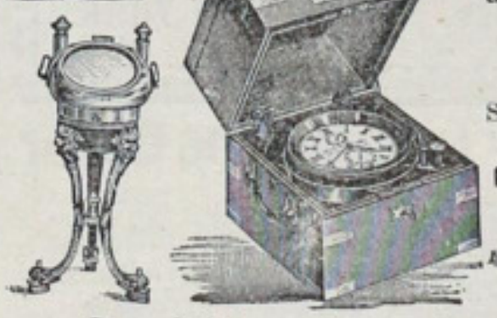

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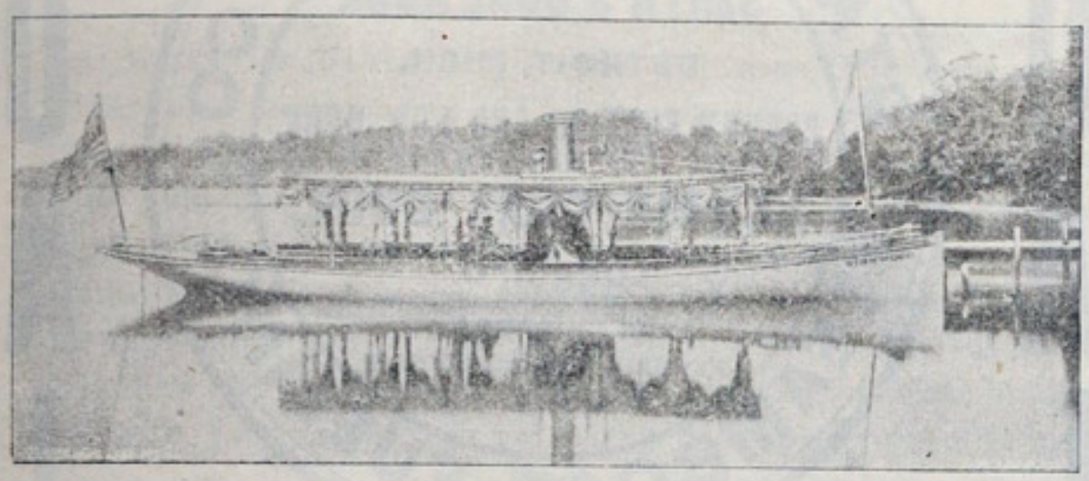

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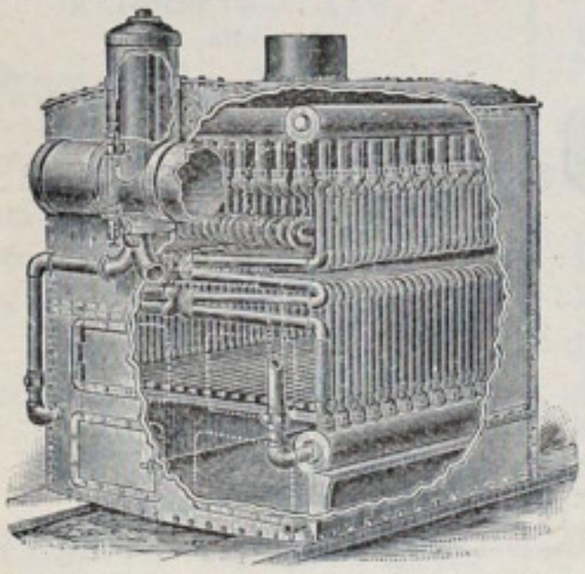

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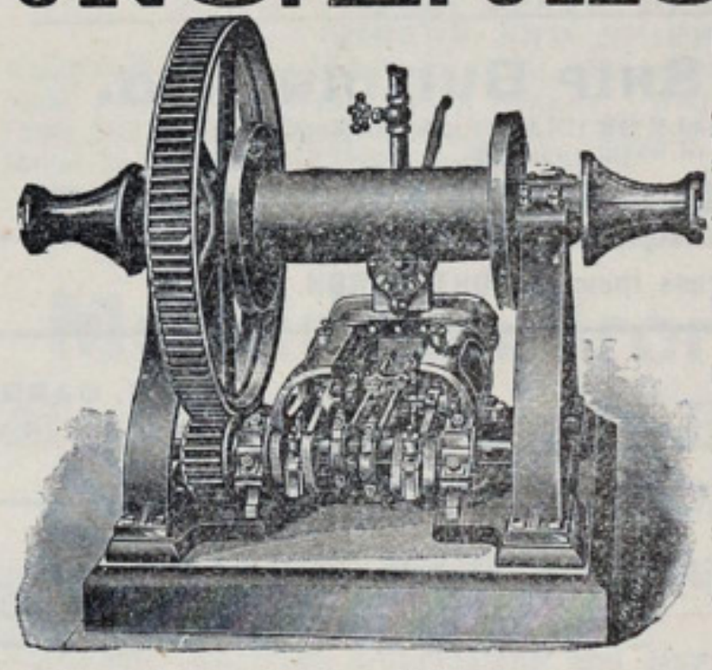

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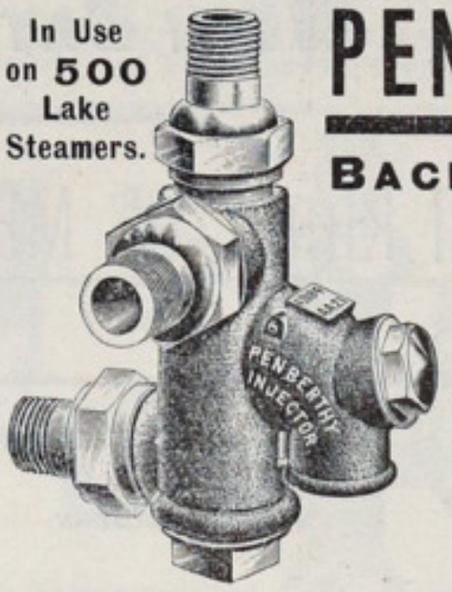

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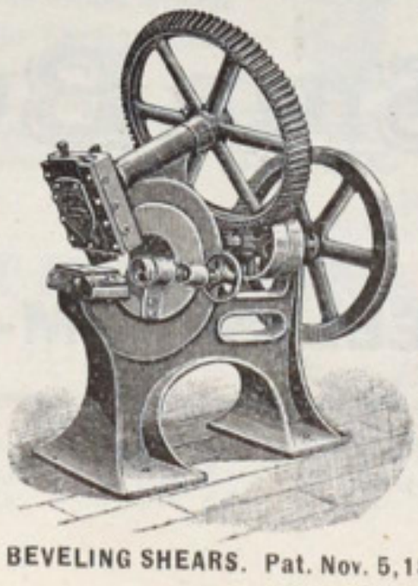

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